We claim:

1. Isolated precursor cells of a mammal from peripheral tissues containing sensory receptors, wherein the precursor cells are selected from a group consisting of neural stem cells, neural progenitor cells and a combination of neural stems cells and neural progenitor cells.

2. The cells of claim 1, wherein the cells are isolated from olfactory epithelium of a mammal.

3. ~~The cells of claim 1, wherein the cells are isolated from a tongue of a mammal.~~

4. The cells of claim 1, which express glutamic acid-decarboxylase.

5. The cells of claim 1, which under appropriate conditions can be differentiated into neurons, astrocytes or oligodendrocytes.

6. The cells of claim 1, transfected with a heterologous gene.

7. The cells of claim 6, wherein the gene encodes a trophic factor.

8. Cells differentiated from the precursor cells of claim 1.

9. The cells of claim 8, wherein the cells express neuronal markers and contain dopaminergic neurons.

10. The cells of claim 8, selected from a group consisting of neurons, astrocytes and oligodendrocytes.

11. The cells of claim 1, or neurons, astrocytes or oligodendrocytes differentiated from the cells of claim 1, in a pharmaceutical composition for use in implant therapy, comprising a pharmaceutically acceptable carrier, auxiliary or excipient .

12. A method of treating an individual suffering from a neurodegenerative disease or neurotrauma comprising implanting the cells of claim 1, or neurons, astrocytes or oligodendrocytes differentiated from the cells of claim 1, into the CNS, PNS, spinal cord or other tissue of the individual.

13. A method of treating an individual suffering from a neurodegenerative disease or neurotrauma comprising administering the cells of claim 11 to the individual.

14. A method for isolating and purifying precursor cells from the olfactory epithelium of a mammal, comprising:

- taking a sample of the olfactory epithelium from the mammal,
- dissociating the sample into single cells,
- placing the cells in culture, and
- isolating the cells which survive in culture.

15. The method of claim 14, further comprising differentiating the cells which survive in culture into neurons, oligodendrocytes or astrocytes.

16. The method of claim 14, in which the mammal is a human and is suffering from a neurodegenerative disease or neurotrauma and the method further comprises implanting the cells or the neurons, astrocytes or oligodendrocytes differentiated from the cells, into the CNS, PNS, spinal cord or other tissue of the human.

17. The method of claim 14, in which the mammal is a human and is not suffering from a neurodegenerative disease or from neurotrauma and the method further comprises implanting the cells or the neurons, astrocytes or oligodendrocytes differentiated from the cells, into a second human who is suffering from the neurodegenerative disease or from neurotrauma.

18. The method of claim 16 or 17, in which the neurodegenerative disease is selected from a group consisting of Parkinson's disease, Alzheimer's disease, Huntington's disease and Multiple Sclerosis.

19. The method of claim 16 or 17, in which the neurotrauma is selected from a group consisting of stroke and spinal cord injury.

20. The method of claim 14, in which the cells which survive in culture are spherical aggregates.

21. The cells of claim 1, or neurons, astrocytes or oligodendrocytes differentiated from the cells of claim 1 in a kit for the treatment of a disease, disorder or abnormal physical state.

22. The cells of claim 1 or neurons, astrocytes or oligodendrocytes differentiated from the cells of claim 1. for a use selected from a group consisting of:

- toxicity testing,
- testing the safety efficacy of a drug,
- testing the efficacy of a drug,
- developing derivative cell lines and
- isolating genes or proteins involved in cell differentiation.